

Long Term Stewardship

Comments

L-0055/067

DOE considers that many engineered structures and administrative or institutional controls have remained in place for several hundreds of years, in Europe for example, that this is considered a very conservative assumption. But if you look at examples in this country of places such as the Love Canal, you can see that off times, these waste sites are forgotten or lost. Even Hanford is replete with examples of lost burial sites with no records of what or where materials have been buried.

Response

Long-term stewardship activities are discussed in Volume I Section 2.2.7.

Comments

E-0043/066, EM-0217/066, EM-0218/066, L-0056/066, LM-0017/066, LM-0018/066

Measures such as establishing easements and deed restrictions or zoning and land-use restrictions have the potential for environmental impact; ecological, geological, and socio-economic to name just a few. Mitigation measures and activities should be quantitatively analyzed within the HSW EIS.

Response

The Hanford Central Plateau is expected to remain an industrial-exclusive zone as described in the Hanford Comprehensive Land-Use Plan Environmental Impact Statement (DOE 1999).

DOE does not and will not rely solely on long-term stewardship to protect people and the environment. As indicated in the DOE sponsored report "Long-Term Institutional Management of U.S. Department of Energy Legacy Waste Sites" (National Research Council 2000), "contaminant reduction is preferred to contaminant isolation and the imposition of stewardship measures." Contaminant reduction is a large part of the ongoing cleanup efforts at Hanford. Most of the analyses in the HSW EIS are based on the assumption that long-term institutional controls would no longer be in effect 100 years after closure (about 2150 AD). Long-term groundwater impacts and subsequent human health impacts were determined based on the assumption that caps would degrade and eventually provide no protection (see Volume I Sections 5.3 and 5.11 and Volume II Appendices F and G). In addition, "intruder scenarios" are analyzed to determine the impacts of gaining access to the site (i.e., no institutional controls) and digging or drilling into waste sites. See Volume I Section 5.11.2.2 and Volume II Appendix F Section F.3. Further information on DOE's long-term stewardship activities can be found in the DOE Long-Term Stewardship Study (DOE 2001a). The discussions of long-term stewardship in Volume I Sections 2.2.7 and 5.18 of the HSW EIS have been revised in response to comments.

An expanded discussion of potential mitigation measures is in Volume I Section 5.18.

Comments

L-0035/003

I don't need to recite to you what's happening with all the radioactive trash that is currently at Hanford and the dangers to our Northwest region, the groundwater and the Columbia. You well know the dangers. ... I am concerned for your and my children, grandchildren and future generations, if they are to be.

L-0037/001

...it is apparent to me that you are not concerned about your or my grandchildren.

L-0055/009

In the EIS discussion long-term stewardship activities are intended to continue isolating hazards from people and the environment. Long term stewardship of nuclear waste is another large uncertainty that is untested and

Long Term Stewardship

unknown. This is not a management strategy currently working at Hanford DOE. The tanks were never originally designed to leak and contaminate the ground water. The uranium spikes being seen in the ground water are not intentional. What guarantee will be available that funding is permanently and perpetually available for long-term stewardship? And what contingency funding is available if a leak is discovered from some of these isolated waste sites?

P-0098/002

They [the federal government] are creating a lethal, poisoned future for our children.

TSP-0010/005

How will future populations know how long to avoid this site.

Response

The Hanford Central Plateau is expected to remain an industrial-exclusive zone as described in the Hanford Comprehensive Land-Use Plan Environmental Impact Statement (DOE 1999).

A discussion of long-term stewardship is presented in Volume I Sections 2.2.3 and 2.2.7. Evaluations in the HSW EIS are based on the assumption of active institutional controls for 100 years after site closure. Passive institutional controls would be implemented after that time.

Radioactive waste disposal areas at Hanford and other DOE sites will remain under restricted access government control for as long as necessary.

Comments

E-0043/068, EM-0217/068, EM-0218/068, L-0056/068, LM-0017/068, LM-0018/068

Because the risks of nuclear waste release are so great, long-term stewardship is necessary regardless of where or how the waste is stored. At risk are natural resources such as the coastal oceans (fed by rivers running through the Savannah River Site and Hanford), irrigated farm lands, groundwater aquifers, and fisheries. Human health risks include increased incidence and severity of cancer and other diseases. For example, just one nuclear weapon processing site has the potential to induce cancer in every person currently on the planet, 208 million times over. The impacts on the regions designated as "national sacrifice areas" and their buffer zones also should be considered.

L-0044/075

2.2.7, pp. 2.40-41 There is no recognition that the "can include" list is incomplete when compared to DOE's own documents on long-term stewardship. Those documents recognize the need for information maintenance and management, public involvement and accountability, and contingency planning. See, for instance, the National Research Council's report Long-Term Institutional Management of U.S. Department of Energy Legacy Waste Sites, Ch. 5.

L-0044/076

2.2.7, pp. 2.40-41 While actual requirements "are dependent on rules and regulations under which the specific cleanup and post-cleanup activities are performed," both USEPA and Ecology, using both CERCLA and closure under Washington's Hazardous Waste Management Act, have been clear that reliability of institutional controls is a requirement. There is no discussion of the reliability of institutional controls (e.g., there is no recognition that the Federal Government has refused to register contaminated sites under Colorado's environmental easement law.)

L-0044/078

Summary, Sec. S.1, pp. S.3 The fifth bullet (line 16) implies that the EIS is about closure and post-closure stewardship of on-site facilities. But the discussion of post-closure stewardship in the EIS (Sec. 2.2.7) is inadequate and contains no real information about specific actions and facilities at Hanford.

Long Term Stewardship

L-0044/140

Ecology also does not support the USDOE's statements that due to administrative controls, individuals will be prevented from drilling wells, drinking water, and living over buried waste for an extended time.

Response

DOE does not and will not rely solely on long-term stewardship to protect people and the environment. As indicated in the DOE sponsored report "Long-Term Institutional Management of U.S. Department of Energy Legacy Waste Sites" (National Research Council 2000), "contaminant reduction is preferred to contaminant isolation and the imposition of stewardship measures." Contaminant reduction is a large part of the ongoing cleanup efforts at Hanford. Most of the analyses in the HSW EIS are based on the assumption that long-term institutional controls would no longer be in effect 100 years after closure (about 2150 AD). Long-term groundwater impacts and subsequent human health impacts were determined based on the assumption that caps would degrade and eventually provide no protection (see Volume I Sections 5.3 and 5.11 and Volume II Appendices F and G). In addition, "intruder scenarios" are analyzed to determine the impacts of gaining access to the site (i.e., no institutional controls) and digging or drilling into waste sites. See Volume I Section 5.11.2.2 and Volume II Appendix F Section F.3. Further information on DOE's long-term stewardship activities can be found in the DOE Long-Term Stewardship Study (DOE 2001a). The discussions of long-term stewardship in Volume I Sections 2.2.7 and 5.18 of the HSW EIS have been revised in response to comments.

Comments

E-0043/039, EM-0217/039, EM-0218/039, L-0056/039, LM-0017/039, LM-0018/039

Any plan to clean up nuclear waste is incomplete without a long-term stewardship plan. The HSW EIS fails to address the need for an ongoing, long-term funding mechanism in order to ensure that long-term stewardship continues for hundreds of years into the future.

Response

DOE does not and will not rely solely on long-term stewardship to protect people and the environment. As indicated in the DOE sponsored report "Long-Term Institutional Management of U.S. Department of Energy Legacy Waste Sites" (National Research Council 2000), "contaminant reduction is preferred to contaminant isolation and the imposition of stewardship measures." Contaminant reduction is a large part of the ongoing cleanup efforts at Hanford. Most of the analyses in the HSW EIS are based on the assumption that long-term institutional controls would no longer be in effect 100 years after closure (about 2150 AD). Long-term groundwater impacts and subsequent human health impacts were determined based on the assumption that caps would degrade and eventually provide no protection (see Volume I Sections 5.3 and 5.11 and Volume II Appendices F and G). In addition, "intruder scenarios" are analyzed to determine the impacts of gaining access to the site (i.e., no institutional controls) and digging or drilling into waste sites. See Volume I Section 5.11.2.2 and Volume II Appendix F Section F.3. Further information on DOE's long-term stewardship activities can be found in the DOE Long-Term Stewardship Study (DOE 2001a). The discussions of long-term stewardship in Volume I Sections 2.2.7 and 5.18 of the HSW EIS have been revised in response to comments.

Charging DOE waste generators higher disposal costs is not expected to reduce the amount of waste generated by DOE sites or to increase the amount of waste reduction already occurring under the DOE pollution prevention and waste minimization program. The Pollution Prevention Act, Section 6002 of RCRA and several executive orders were enacted, in part, because it was recognized that (1) government organizations should make efforts to minimize the amount of waste they generate and (2) economic incentives generally do not work for government entities. For waste being disposed of at Hanford, the waste generator and the disposal facility are both part of the same government organization, the DOE. Although private companies can collect money today for work to be performed in later years, government organizations like DOE are precluded from collecting money to cover future costs (such as closure costs and long-term

Long Term Stewardship

monitoring costs) without specific congressional approval.

The recent "Report to Congress - The Cost of Waste Disposal: Life Cycle Cost Analysis of Disposal of Department of Energy Low-Level Radioactive Waste at Federal and Commercial Facilities" (DOE 2002d) explains that waste disposal decisions should be made based on the total life-cycle cost of waste disposal. These decisions need to consider the costs for treatment, inspection and verification, disposal, closure, and long-term monitoring. The DOE pollution prevention and waste minimization program already requires waste disposal decisions to be made based on life-cycle costs and other factors. See Volume I Section 2.2.5 for a discussion of the DOE pollution prevention/waste minimization program.

Comments

L-0055/033

We are not able to resolve many of these issues because they reflect either differing points of view or uncertainties in predicting the future. DOE can not predict the future. Nor can they make statements like the ground water will not be used in the future. Nor that institutional control will adequately protect the people who choose to live in this area in the future.

Response

DOE does not and will not rely solely on long-term stewardship to protect people and the environment. As indicated in the DOE sponsored report "Long-Term Institutional Management of U.S. Department of Energy Legacy Waste Sites" (National Research Council 2000), "contaminant reduction is preferred to contaminant isolation and the imposition of stewardship measures." Contaminant reduction is a large part of the ongoing cleanup efforts at Hanford. Most of the analyses in the HSW EIS are based on the assumption that long-term institutional controls would no longer be in effect 100 years after closure (about 2150 AD). Long-term groundwater impacts and subsequent human health impacts were determined based on the assumption that caps would degrade and eventually provide no protection (see Volume I Sections 5.3 and 5.11 and Volume II Appendices F and G). In addition, "intruder scenarios" are analyzed to determine the impacts of gaining access to the site (i.e., no institutional controls) and digging or drilling into waste sites. See Volume I Section 5.11.2.2 and Volume II Appendix F Section F.3. Further information on DOE's long-term stewardship activities can be found in the DOE Long-Term Stewardship Study (DOE 2001a). The discussions of long-term stewardship in Volume I Sections 2.2.7 and 5.18 of the HSW EIS have been revised in response to comments.

An expanded discussion of uncertainties associated with the HSW EIS impact analyses is included in Volume I Section 3.5.

Comments

E-0041/005

In response to a question about how long the site will be curated, the responder says that it will be under DOE control 'indefinitely'. Isn't this a rather too cavalier assertion of the immortality of bureaucracies? To date, no known bureaucracy has survived more than ~3000 yrs—and yet parts of this document, at least, purport to describe the future of the site out to 10,000 years from now—by which time the wastes at Hanford will not have become harmless—but the people who put them there will likely be long decayed themselves.

E-0043/067, EM-0217/067, EM-0218/067, L-0056/067, LM-0017/067, LM-0018/067

The nuclear waste at Hanford has an average half-life of 3,000 years, and therefore, "clean-up" at best means "safe storage." Long-term stewardship that extends over the next several centuries and millennia is necessary to ensure that the storage is safe and that human health and the environment are protected.

L-0044/020

Vol. I, Sec. S.7, p. S.26: The statement that the failure of institutional controls is very, if not overly

Long Term Stewardship

conservative, is not well-supported. The National Research Council's report Long-Term Institutional Management of U.S. Department of Energy Legacy Waste Sites, p. 52 says: "Often the real issue is not whether use restrictions will eventually fail, but when and what the consequences will be when they do."

L-0044/043

With regard to institutional controls and long term stewardship, the RHSW EIS takes a very cursory approach. Instead of mentioning the longevity of European society and buildings, please reference the vast number of documents that describe average time elapsed prior to institutional control failures.

Response

A discussion of long-term stewardship is presented in Volume I Sections 2.2.3 and 2.2.7. Evaluations in the HSW EIS are based on the assumption of active institutional controls for 100 years after site closure. Passive institutional controls would be implemented after that time.

Comments

L-0061/003

In the Waste Streams and Waste Management Facilities section, the DEIS states that waste will be disposed of in lined and unlined facilities based on whether the waste is considered to be low-level, mixed low level, or transuranic. The Department [of the Interior] recommends that any in-ground disposal of waste be in lined facilities that are designed to last as long as the waste is hazardous and/or radioactive. Operation and maintenance and monitoring plans should be clearly described in the FEIS to ensure that waste disposal sites do not result in unforeseen impacts to natural resources and to provide better data for analysis. We recommend that compliance sampling and monitoring be done at the anticipated release sites for groundwater and surface water, as opposed to the downstream location described in the DEIS. We also suggest that cleanup and monitoring be conducted based on effect concentrations of the various contaminants rather than the general definitions of low-level, mixed low level, and transuranic wastes provided in the DEIS.

Response

The preferred alternative as described in Volume I Section 3.7 is to dispose of low level waste in newly constructed lined disposal facilities as soon as they are available. For purposes of analysis the HSW EIS assumes this would occur by 2007. MLLW is currently being, and will continue to be, disposed of in lined facilities.

However, the use of unlined trenches for disposal of low level waste is an established, legal, and environmentally protective method of low level waste disposal at both DOE and commercial facilities. As such, it is a reasonable alternative, under CEQ regulations, and must be analyzed. The HSW EIS considers a wide range of alternatives for disposal of low level waste in both lined and unlined facilities. Lined trench alternatives include leak detection and leachate collection capabilities. In addition, groundwater monitoring would be done in compliance with applicable RCRA and State hazardous waste, TPA, and DOE requirements to validate the performance of the disposal facilities.

DOE does not and will not rely solely on long-term stewardship to protect people and the environment. As indicated in the DOE sponsored report "Long-Term Institutional Management of U.S. Department of Energy Legacy Waste Sites" (National Research Council 2000), "contaminant reduction is preferred to contaminant isolation and the imposition of stewardship measures." Contaminant reduction is a large part of the ongoing cleanup efforts at Hanford. Most of the analyses in the HSW EIS are based on the assumption that long-term institutional controls would no longer be in effect 100 years after closure (about 2150 AD). Long-term groundwater impacts and subsequent human health impacts were determined based on the assumption that caps would degrade and eventually provide no protection (see Volume I Sections 5.3 and 5.11 and Volume II Appendices F and G). In addition, "intruder scenarios" are analyzed to determine the impacts of gaining access to the site (i.e., no institutional controls) and digging or drilling into waste sites. See Volume I Section 5.11.2.2 and Volume II Appendix F Section F.3. Further information on DOE's long-term stewardship

Long Term Stewardship

activities can be found in the DOE Long-Term Stewardship Study (DOE 2001a). The discussions of long-term stewardship in Volume I Sections 2.2.7 and 5.18 of the HSW EIS have been revised in response to comments.

DOE maintains an extensive radiological and hazardous chemical monitoring network for groundwater, surface water, air, and biological resources. The results of these analyses are summarized in the annual Hanford Site Environmental Report (Poston et al. 2002) and the annual Groundwater Monitoring Report (Hartman et al. 2002).

Groundwater monitoring is conducted according to TPA requirements, the Hanford Dangerous Waste Management permit, and DOE Orders. Groundwater monitoring will be expanded as necessary according to agreements between DOE and regulatory agencies to support future waste management operations.

Comments

L-0044/073

2.2.7, pp. 2.40-41 This section is inadequate. First, its three examples provide no information about the metrics to be used in making the choices relating to closure of burial grounds and facilities dealt with in this EIS. Nor do the examples indicate the metrics that might be used in making such decisions (e.g., it may or may not be impossible to get 100 per cent of the waste out of a tank, but it is technically possible to remove the tank and dispose of it somewhere else.) There is no indication of what measures would be used to assess relative risk of retrieving waste from "old burial grounds". There is no effort to connect this abstract discussion to the decisions that will be made under the umbrella of this EIS. How does this generic discussion of tanks and old burial grounds relate to closure of currently operating burial grounds and decommissioning and closure or removal of treatment and storage facilities?

Response

The long term stewardship discussions in Volume I Sections 5.18.9 and 2.2.7 have been revised.